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cc: Daron, tom  
Susan, Mary Ann

## MEMORANDUM

**TO:** Utah Division of Oil, Gas and Mining (DOGM), Minerals Regulatory Program

RECEIVED

**FROM:** Bryce Tripp, Senior Scientist, Utah Geological Survey

**DATE:** September 26, 2005

OCT 11 2005

**SUBJECT:** Geology of the Red Dome, Inc. cinder pit

DIV OF OIL GAS & MINING

As requested by DOGM, I have evaluated the geology of the material mined at the Red Dome, Inc. pit. I have reviewed the literature and available geologic maps and toured the property. Daron Haddock and I met Dexter Anderson and Lee Miller at the Red Dome pit at around 11:00 am on September 15, 2005. Daron discussed the applicable rules with them and I gave them a quick summary of the geology of their property as published in Oviatt (1991). Dexter and Lee then gave us a tour of the property.

The Red Dome, Inc. cinder (scoria) pit is excavated in the Ice Springs volcanic cone (located in section 22, 23, 26, and 27, T.21S., R.6W., Tabernacle Hill and Meadow 7.5' quadrangles, in Millard County). The volcanic cone is composed of the Quaternary Basalt of Ice Springs (Oviatt, 1991) (Qvb1 on figure 1). The volcanic rock consists of basalt flows with associated volcanic cinders. This basalt is very young, perhaps only 4000 to 660 years old (Hintze and others, 2003).

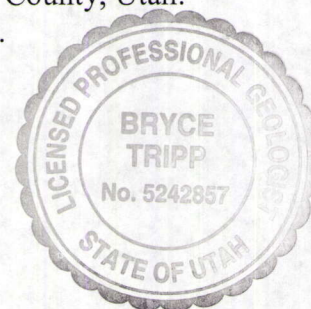
All of the basalt flow and cinder material (Qvb1 on figure 1) is considered bedrock or bedrock float because it is in place or has not moved very far from where it was erupted. None of this material has been significantly water transported either by streams or by lake currents. It is very fresh and angular (figures 2 and 3), with shiny, commonly iridescent surfaces. A large percent of the fragments shows well-preserved bubble and flow textures (figure 4).

Additionally, there is not enough topographic relief on this volcanic cone to have developed streams, and as the volcanic cone is much younger than Lake Bonneville, there has been no water transport or rounding of the cinders by lake currents. In summary, there is no evidence that material mined at this site was deposited by sedimentary processes.

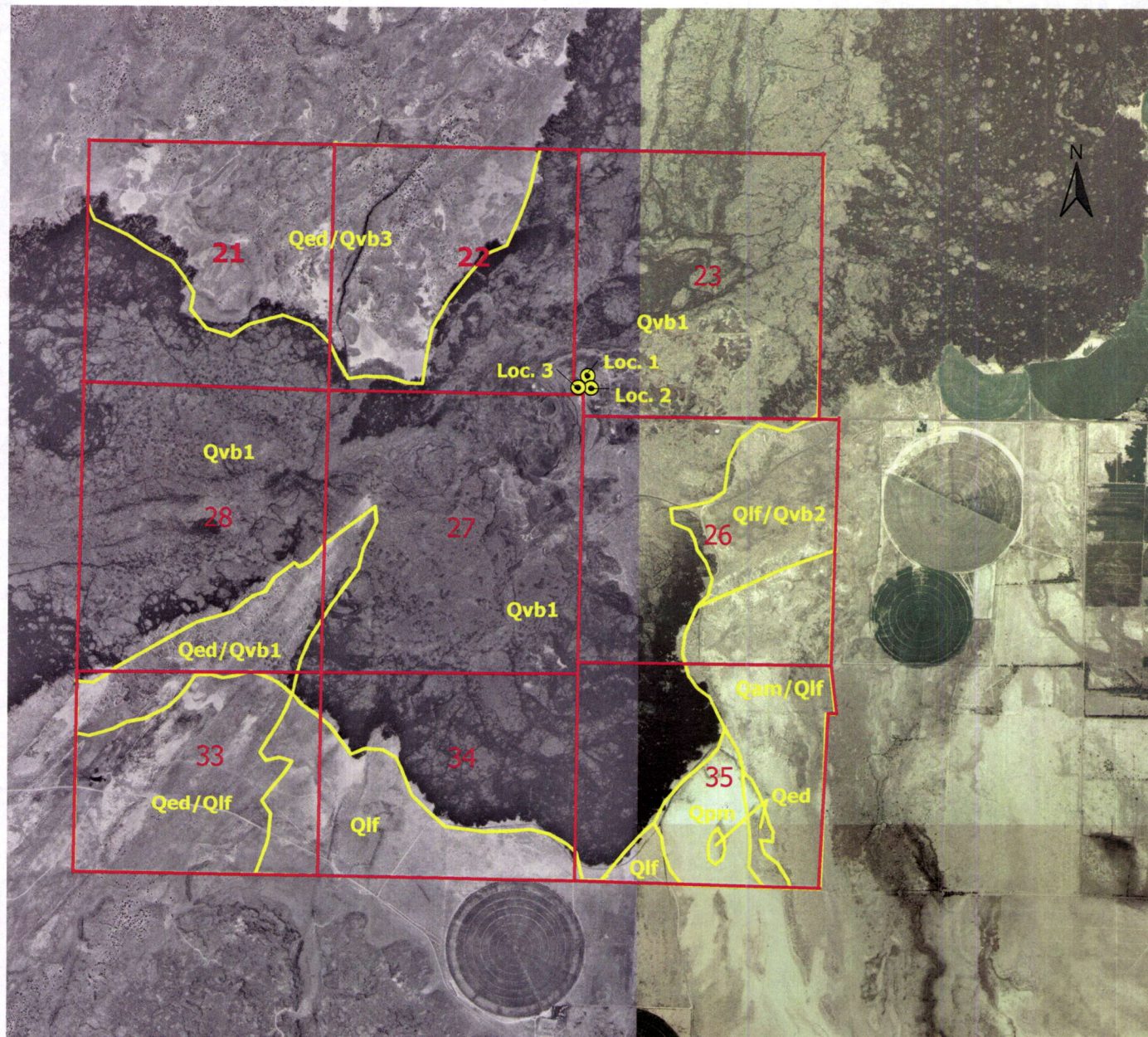
### References:

Hintze, L.F., Davis, F.D., Rowley, P.D., Cunningham, C.G., Steven, T.A., and Willis, G.C., 2003, Geologic map of the Richfield 30' x 60' quadrangle, southeast Millard County and parts of Beaver, Piute, and Sevier Counties, Utah: Utah Geological Survey Map 195, scale 1:100,000.

Oviatt, C.G., 1991, Quaternary geology of the Black Rock Desert, Millard County, Utah: Utah Geological Survey Special Studies 73, 23 p., 1 plate, scale 1:100,000.







- Qvb1 - Basalt of Ice Springs
- Qed/Qvb3 - Wind-blown sand/Basalt of Pavant Ridge
- Qed/Qvb1 - Wind-blown sand/Basalt of Ice Springs
- Qed - Wind-blown sand
- Qlf - Younger fine-grained lake deposits
- Qpm - Mud flats
- Qed/Qlf - Wind-blown sand/younger fine-grained lake deposits
- Qam/Qlf - Alluvial mud/younger fine-grained lake deposits

Figure 1. Geology of the Ice Springs crater area, T.21S., R.6W., SLBM (from Oviatt, 1991). Red Dome, Inc. cinder pit is located within sections 22, 23, 26, and 27. Photo locations are shown as yellow and black dots. (Black and white part of the photographic base is a 1993, 1-meter resolution, U.S. Geological Survey digital orthophoto; the color part of the base is a 2004, 1-meter National Agricultural Imagery Program photo).





Figure 2. Red Dome pit highwall (location 2 on figure 1) showing lava flow over angular cinders. Note pen for scale.





Figure 3. Blown-up detail from figure 2 (location 2 on figure 1) showing angularity and bubble and flow texture of basalt fragments. Note pen for scale.





Figure 4. Close-up of scoria in Red Dome pit highwall (location 1 figure 1) showing fresh, unabraded surfaces of fragments with preserved bubble and flow textures.